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EXAMINER
FLETCHER III, WILLIAM P

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 09/05/2003

15

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/747,731	YAMAZAKI ET AL.	
	Examiner	Art Unit	
	William P. Fletcher III	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *09 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disp sition of Claims

4)☒ Claim(s) *20-26,28-50,52 and 53* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *20-26,28-50,52 and 53* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 May 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Pri rity under 35 U.S.C. §§ 119 and 120

13)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 05/19/2003 (Paper No. 11) has been entered.

Drawings

2. The drawings were received on 05/23/2003 (as part of Paper No. 11). These drawings are acceptable.

Information Disclosure Statement

3. The information disclosure statement filed 05/19/20003 (Paper No. 11) fails to comply with 37 CFR 1.97(d) because it lacks a statement as specified in 37 CFR 1.97(e). It has been placed in the application file, but the information referred to therein has not been considered.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claim 49 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

6. The term "active matrix type electroluminescence display device" is indefinite. It is unclear what is encompassed by "type" and, consequently, one of ordinary skill in the art would

not be reasonably apprised of the metes and bounds of the subject matter of this claim. The examiner suggests that the term "active matrix electroluminescence display device" would render the claim sufficiently definite.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

9. Claims 20 – 22, 44, 45, and 48 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A) in view of Grothe et al. (US 3,391,490 A) and Monk (US 4,187,801 A).

10. With respect to claims 20 and 48, Arai teaches a method of manufacturing a display device in a cluster tool [abstract; c. 2, ll. 31 – 35; and c. 3, ll. 10 – 15]. Each processing chamber, of which there are at least two, has an evaporation source for the deposition of a

material, which may be an organic electroluminescence material, on the substrate [c. 3, l. 66 – c. 5, l. 55]. As the substrate is transferred between chambers, layers of different EL materials are successively applied to produce the display device [c. 4, ll. 34 – 51 and c. 9, ll. 1 – 20]. Arai does not place any limitations on the layer deposition processes carried-out in the chambers.

11. Arai does not teach that the first and second evaporation sources have a first direction longer than a second direction or that the relative positions of the sources and the substrates are repeatedly moved during deposition so that a same portion of the substrate is coated with the organic EL material at least twice.

12. Grothe teaches that, when coating a substrate by vapor deposition, an evaporation source elongated in one dimension results in enhanced vapor density and deposition uniformity over the entire width of the substrate [c. 5, ll. 40 – 50 and 60 – 63]. It is the examiner's position that the source of Grothe reads on applicant's source.

13. It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize, as the evaporation source, the evaporation source of Grothe. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of achieving enhanced vapor density and deposition uniformity, as taught by Grothe.

14. Monk teaches that, in a process where a substrate is coated from an evaporation source, it is known to move the substrate and the evaporation source relative to each other [c. 1, ll. 9 – 21]. Doing so yields a uniform coating [c. 1, l. 15].

15. It would have been obvious to one of ordinary skill in the art to further modify the process of Arai so as to move the substrate and the evaporation sources relative to each other, as

taught by Monk. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of yielding a uniform coating.

16. Lastly, it is well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

17. With respect to claim 21, none of the cited references teach cleaning the inside of the deposition chambers. It is the examiner's position, however, that cleaning the inside of a deposition chamber is a well-known means of eliminating contaminants in the chamber. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

18. With respect to claim 22, the transfer vacuum chamber **1** of Arai reads on a "conveyor chamber."

19. With respect to claims 44 and 45, it would have been obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

20. Claims 23, 25, 29, 33, 34, 43, 46, 47, 50, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. (US 6,326,726 B1), in view of Grothe et al. (US 3,391,490 A) and Bennett (US 2,435,997 A).

21. Mizutani teaches a method for the manufacture of an electroluminescent display device [c. 1, ll. 6 – 10]. The various layers of the device, including the organic electroluminescent

(light-emitting) layers, are deposited on a substrate in a vacuum evaporation chamber by evaporation of an organic material from an evaporation source [c. 8, l. 55 – c. 9, l. 19]. No limitations are placed on the vacuum deposition process other than that it is preferably carried-out in a direction vertical to the surface of the substrate [c. 9, ll. 14 – 16].

22. Mizutani do not teach that the evaporation source has a first direction longer than a second direction or repeatedly moving the relative position of the evaporation source with respect to the substrate along a second direction during the step of evaporation the material in order than a same portion of the substrate is coated with the organic EL material at least twice.

23. As noted above, Grothe teach that, when coating a substrate by vapor deposition, an evaporation source elongated in one dimension results in enhanced vapor density and deposition uniformity over the entire width of the substrate [c. 5, ll. 40 – 50 and 60 – 63]. It is the examiner's position that the source of Grothe reads on applicant's source.

24. It would have been obvious to one of ordinary skill in the art to modify the method of Mizutani so as to utilize, as the evaporation source, a source having an elongated shape extending along a first direction, as suggested by Grothe. One of ordinary skill would have been motivated to do so by the desire and expectation of improving vapor density and uniformity.

25. Bennett teaches that, in a vacuum vapor deposition process, moving the evaporation source with respect to the substrate improves deposition speed and uniformity [c. 3, ll. 1 – 10].

26. It would have been further obvious to one of ordinary skill in the art to modify the method of Mizutani so as to move the evaporation source relative to the substrate, as taught by Bennett. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of improving deposition speed and uniformity.

27. None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

28. It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

29. With respect to claim 29, none of the cited references teach a step of cleaning the inside of the evaporation chamber. It is the examiner's position, however, that cleaning the inside of a deposition chamber is a well-known means of eliminating contaminants in the chamber. Consequently, it would have been obvious to one of ordinary skill in the art to do so. Further, plasma is a chamber-cleaning expedient that is well-known in the art.

30. With respect to claim 33, Mizutani further teaches depositing through a mask, the mask being held in place against the substrate by an electromagnet [c. 5, ll. 52 – 57; c. 5, l. 65 – c. 6, l. 6].

31. With respect to claim 34, none of the references teach that the substrate is located between the electromagnet and the shadow mask. Nevertheless, it would have been obvious to utilize such an arrangement so that the magnet does not obstruct the flow of coating material from the coating source, through the mask, to the substrate.

32. With respect to claim 50, the length of the evaporation source is a result-effective variable effecting the efficiency of the coating process. In other words, the smaller (shorter) the source, the longer it takes to coat the substrate. A source that is too large (long) may be wasteful of evaporation material and too costly. Absent a clear and convincing showing of unexpected results demonstrating the criticality of the claimed range of source length, it would have been obvious to one of ordinary skill in the art to optimize this result-effective variable by routine experimentation.

33. With respect to claim 52, none of the cited references teach coating the same portion of the substrate at least twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

34. Claims 24, 30, 43, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. (US 6,326,726 B1), in view of Grothe et al. (US 3,391,490 A), Bennett (US 2,435,997 A), and Monk (US 4,187,801 A).

35. The combined teaching of Mizutani, Grothe, and Bennett is detailed in paragraphs 20 – 33 above. None of these references teach that the evaporation source is longer than at least one edge of the substrate.

36. Monk teaches that, in a vapor deposition method, it is conventional to treat a larger area than covered by the sample to avoid edge effects [c. 1, ll. 17 – 20].

37. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Mizutani, Grothe, and Bennett, so as to utilize an elongated source that is longer than

at least one edge of the substrate. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of avoiding edge effects, as taught by Monk.

38. It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

39. With respect to claim 30, none of the cited references teach a step of cleaning the inside of the evaporation chamber. It is the examiner's position, however, that cleaning the inside of a deposition chamber is a well-known means of eliminating contaminants in the chamber. Consequently, it would have been obvious to one of ordinary skill in the art to do so. Further, plasma is a chamber-cleaning expedient that is well-known in the art.

40. Claims 26, 31, 35, 43, 46, 47, and 52 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. (US 6,326,726 B1), in view of Feuerstein et al. (US 4,627989 A) and Bennett (US 2,435,997 A).

41. The teaching of Mizutani is detailed above, as is the teaching of Bennett. Neither of these references discloses an evaporation source comprising a plurality of evaporation cells arranged along a first direction.

42. Feuerstein teaches a method of coating a substrate utilizing a vacuum evaporator comprising an elongated array of individually controllable vapor sources [c. 1, ll. 21 – 24; c. 2, ll.

40 – 45; c. 4, ll. 55 – 57; and c. 6, ll. 18 – 26]. Such a source facilitates greater control over deposition thickness and uniformity [c. 2, ll. 41 – 45].

43. It would have been obvious to one of ordinary skill in the art to modify the process of Mizutani so as to utilize an evaporation source comprising a plurality of evaporation cells arranged along a first direction so as to achieve greater control over deposition thickness and uniformity, as taught by Feuerstein.

44. It would have been further obvious to move the relative position of this source with respect to the substrate during evaporation. Bennett teaches that moving the source with respect to the substrate improves deposition speed and uniformity [see above]. Specifically moving the source instead of the substrate is particularly advantageous because it requires a smaller vacuum chamber [c. 3, l. 72 – c. 4, l. 3].

45. None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

46. It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

47. With respect to claim 31, none of the cited references teach a step of cleaning the inside of the evaporation chamber. It is the examiner's position, however, that cleaning the inside of a

deposition chamber is a well-known means of eliminating contaminants in the chamber. Consequently, it would have been obvious to one of ordinary skill in the art to do so. Further, plasma is a chamber-cleaning expedient that is well-known in the art.

48. With respect to claim 35, none of the references teach that the substrate is located between the electromagnet and the shadow mask. Nevertheless, it would have been obvious to utilize such an arrangement so that the magnet does not obstruct the flow of coating material from the coating source, through the mask, to the substrate.

49. With respect to claim 52, none of the cited references teach coating the same portion of the substrate at least twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

50. Claims 28, 32, 36, 43, 46, and 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mizutani et al. (US 6,326,726 B1), in view of Feuerstein et al. (US 4,627,989 A) and Bennett (US 2,435,997 A) or, in the alternative, over Mizutani et al., in view of Feuerstein et al., Bennett, and Monk (US 4,187,801 A).

51. The combined teaching of Mizutani, Feuerstein, and Bennett is detailed above. Additionally, Feuerstein illustrates, but does not require, a source that is longer than at least one edge of the substrate [Fig. 1]. Nevertheless, it would have been obvious to utilize a source longer than at least one edge of the substrate to avoid edge effects, as taught by Monk [see above].

52. None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

53. It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

54. With respect to claim 32, none of the cited references teach a step of cleaning the inside of the evaporation chamber. It is the examiner's position, however, that cleaning the inside of a deposition chamber is a well-known means of eliminating contaminants in the chamber. Consequently, it would have been obvious to one of ordinary skill in the art to do so. Further, plasma is a chamber-cleaning expedient that is well-known in the art.

55. With respect to claim 36, none of the references teach that the substrate is located between the electromagnet and the shadow mask. Nevertheless, it would have been obvious to utilize such an arrangement so that the magnet does not obstruct the flow of coating material from the coating source, through the mask, to the substrate.

56. Claims 37, 43, 48, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Bennett (US 2,435,997 A) and Grothe et al. (US 3,931,490 A).

57. The teaching of Arai is detailed in paragraph 10 above. Arai does not place any limitations on the vapor deposition processes carried-out in the chambers.

58. Arai does not teach that the first and second evaporation sources have a first direction longer than a second direction or that the relative positions of the sources and the substrates are repeatedly moved during deposition so that a same portion of the substrate is coated with the organic EL material at least twice.

59. Grothe teaches that, when coating a substrate by vapor deposition, an evaporation source elongated in one dimension results in enhanced vapor density and deposition uniformity over the entire width of the substrate [c. 5, ll. 40 – 50 and 60 – 63]. It is the examiner's position that the source of Grothe reads on applicant's source.

60. It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize, as the evaporation source, the evaporation source of Grothe. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of achieving enhanced vapor density and deposition uniformity, as taught by Grothe.

61. Bennett teaches that, in a vacuum vapor deposition process, moving the evaporation source with respect to the substrate improves deposition speed and uniformity [c. 3, ll. 1 – 10].

62. It would have been further obvious to one of ordinary skill in the art to modify the method of Arai so as to move the evaporation source relative to the substrate, as taught by Bennett. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of improving deposition speed and uniformity.

63. None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of

times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

64. It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

65. With respect to claim 53, none of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

66. Claims 38, 43, 48, and 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Bennett (US 2,435,997 A), Grothe et al. (US 3,931,490 A), and Monk (US 4,187,801 A).

67. The combined teaching of Arai, Bennett, and Grothe is detailed above. None of the references teach that the evaporation sources are longer than at least one edge of the substrate.

68. Monk teaches that, in a vapor deposition method, it is conventional to treat a larger area than covered by the substrate to avoid edge effects [c. 1, ll. 17 – 20].

69. Consequently, it would have been obvious to one of ordinary skill in the art to modify the method of Arai, Bennett, and Grothe, so as to utilize an elongated source that is longer than at

least one edge of the substrate. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of avoiding edge effects, as suggested by Monk.

70. None of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

71. It would have been further obvious, to one of ordinary skill in the art, to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

72. With respect to claim 53, none of the cited references teach coating the same portion of the substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to one of ordinary skill in the art to do so.

73. Claim 39, 43, 48, and 53 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Feuerstein et al. (US 4,627,989 A), Bennett (US 2,435,997 A).

74. The teaching of Arai is detailed above. Arai does not place any limitations on the vapor deposition processes carried-out in the chambers.

75. Arai does not teach that first and second evaporation sources comprise a plurality of evaporation cells arranged along a first direction or that the relative positions of the sources are repeatedly moved with respect to the substrate during deposition so that a same portion of the substrate is coated at least twice.

76. Feuerstein teaches a method of coating a substrate utilizing a vacuum evaporator comprising an elongated array of individually controllable vapor sources [c. 1, ll. 21 - 24; c. 2, ll. 40 - 45; c. 4, ll. 55 - 57; and c. 6, ll. 18 - 26]. Such a source facilitates greater control over deposition thickness and uniformity [c. 2, ll. 41 - 45].

77. It would have been obvious to one of ordinary skill in the art to modify the process of Arai so as to utilize an evaporation source comprising a plurality of evaporation cells arranged along a first direction so as to achieve greater control over deposition thickness and uniformity, as suggested by Feuerstein.

78. It would have been further obvious to move the relative position of this source with respect to the substrate during evaporation. Bennett teaches that moving the source with respect to the substrate improves deposition speed and uniformity [see above]. Specifically moving the source instead of the substrate is considered advantageous because it requires a smaller vacuum chamber [c. 3, l. 72 - c. 4, l. 3].

79. None of the cited references teach coating the same portion of substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

80. It would have been obvious to one of ordinary skill in the art to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

81. With respect to claim 53, none of the cited references teach coating the same portion of substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

82. Claim 40, 43, and 48 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. (US 5,817,366 A), in view of Feuerstein et al. (US 4,627,989 A) and Bennett (US 2,435,997 A) or, in the alternative, over Arai et al., in view of Feuerstein et al., Bennett, and Monk (US 4,187,801 A).

83. The combined teaching of Arai, Feuerstein, and Bennett is detailed above. Additionally, Feuerstein illustrates, but does not require, a source that is longer than at least one edge of the substrate [Fig. 1]. Nevertheless, it would have been obvious to utilize a source longer than at least one edge of the substrate to avoid edge effects, as taught by Monk [see above].

84. It would have been further obvious to move the relative position of this source with respect to the substrate during evaporation. Bennett teaches that moving the source with respect to the substrate improves deposition speed and uniformity [see above]. Specifically moving the

source instead of the substrate is considered advantageous because it requires a smaller vacuum chamber [c. 3, l. 72 - c. 4, l. 3].

85. None of the cited references teach coating the same portion of substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

86. It would have been obvious to one of ordinary skill in the art to optimize the orientation of the source with respect to the direction of motion so as to achieve the greatest efficiency and uniformity of coating. In particular, an orientation in which the direction of elongation of the source is perpendicular to the direction of motion allows coating the widest swath of substrate possible with each pass of the coating source.

87. Claims 41, 42, 46, and 47 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Mizutani et al. (US 6,326,726 B1) in view of Bennett (US 2,435,997 A).

88. With respect to claim 41, the teaching of Mizutani is detailed above. Mizutani does not teach repeatedly moving the relative position of the evaporation source with respect to the substrate in order that a same portion of the substrate is coated with the material at least twice.

89. Bennett teaches that, in a vacuum vapor deposition process, moving the evaporation source with respect to the substrate improves deposition speed and uniformity.

90. It would have been obvious to one of ordinary skill in the art to modify the method of Mizutani so as to move the evaporation source relative to the substrate, as suggested by Bennett.

One of ordinary skill in the art would have been motivated to do so by the desire and expectation of improving deposition speed and uniformity.

91. None of the cited references teach coating the same portion of substrate twice. It is, nevertheless, well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so.

92. With respect to claim 42, the teaching of Mizutani is described above. Mizutani do not teach repeatedly moving the relative position of the evaporation source with respect to the substrate in order that a same portion of the substrate is coated with the material at least twice.

93. Bennett teaches that, in a vacuum vapor deposition process, moving the evaporation source with respect to the substrate improves deposition speed and uniformity.

94. It would have been obvious to one of ordinary skill in the art to modify the method of Mizutani so as to move the evaporation source relative to the substrate, as suggested by Bennett. One of ordinary skill in the art would have been motivated to do so by the desire and expectation of improving deposition speed and uniformity.

95. None of the cited references teach cleaning the inside of the deposition chambers. It is the examiner's position, however, that cleaning the inside of a deposition chamber is a well-known means of eliminating contaminants in the chamber. Consequently, it would have been obvious to one of ordinary skill in the art to do so. Further, plasma is a chamber-cleaning expedient that is well-known in the art.

96. Claim 49 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Arai et al. {US 5,817,366} in view of Grothe et al. {US 3,391,490} and Monk {US 4,187,801}, as applied to claim 20 above; or over Mizutani et al. {US 6,326,726 B1}, in view of Grothe et al. {US 3,391,490} and Bennett {US 2,435,997}, as applied to claims 23, 25, 29, and 33 above; or over Mizutani et al. {US 6,326,726 B1}, in view of Grothe et al. {US 3,391,490}, Bennett {US 2,435,997}, and Monk {US 4,187,801}, as applied to claims 24 and 30 above; or over Mizutani et al. {US 6,326,726 B1}, in view of Feuerstein et al. {US 4,627,989} and Bennett {US 2,435,997}, as applied to claims 26, 31, and 35 above; or over Mizutani et al. {US 6,326,726 B1}, in view of Feuerstein et al. {US 4,627,989} and Bennett {US 2,435,997} or, in the alternative, over Mizutani et al., in view of Feuerstein et al., Bennett, and Monk {US 4,187,801}, as applied to claims 27, 28, 32, and 36 above; or over Arai et al. {US 5,817,366}, in view of Bennett {US 2,435,997} and Grothe et al. US 3,931,490}, as applied to claim 37 above; or over Arai et al. {US 5,817,366}, in view of Bennett {US 2,435,997}, Grothe et al. US 3,931,490}, and Monk {US 4,187,801}, as applied to claim 38 above; or Arai et al. {US 5,817,366}, in view of Feuerstein et al. {US 4,627,989}, Bennett {US 2,435,997}, as applied to claim 39 above; or over Arai et al. {US 5,817,366}, in view of Feuerstein et al. {US 4,627,989} and Bennett {US 2,435,997} or, in the alternative, over Arai et al., in view of Feuerstein et al., Bennett, and Monk {US 4,187,801}, as applied to claim 40 above; or over Mizutani et al. {US 6,326,726 B1} in view of Bennett {US 2,435,997}, as applied to claims 41 and 42 above, each in view of Spitzer et al. {US 5,258,325}.

97. The teachings of all of the cited references are described above. None of these teach that the display device is an active matrix electroluminescence display device.

98. Spitzer et al. teach that it is the electrode arrangement that distinguishes an active matrix device. Consequently, it is the examiner's position that it would have been obvious to utilize the above-cited methods of depositing organic electroluminescent material to manufacture an active matrix electroluminescent display device. One of ordinary skill in the art would have been motivated by the expectation of successfully manufacturing an active matrix EL display device since the deposition of the organic EL material does not determine whether or not the matrix is active.

Response to Arguments

99. Applicant's arguments filed 05/19/2003 (Paper No. 11) have been fully considered but they are not persuasive.

100. Applicant's attention is drawn to p. 18, ll. 1 - 6 of paper no. 9. Here, the examiner clearly states his position: it is well-known in the art of coating substrates to repeat a coating step the number of times required to build-up a coating of a desired thickness. Consequently, it would have been obvious to do so. Motivation must be explicit or implicit in the reference(s) or the examiner must present a convincing line of reasoning why one of ordinary skill in the art would have found the invention obvious in light of the prior art. *Ex parte Clapp*, 227 USPQ 972 (BPAI 1985).

101. With respect to plasma cleaning, the document cited by applicant discloses cleaning a CVD (Chemical Vapor Deposition) chamber with a plasma. Applicant contends that a CVD chamber is not an evaporation chamber. The examiner is puzzled by this statement. A CVD chamber is a chamber in which deposition from a vapor is conducted. Applicant's evaporation

chamber is also a chamberin which deposition from a vapor is conducted. It is unclear how, exactly, a CVD chamber differs from an evaporation chamber. Consequently, the document cited by applciant appears to bolster the examiner's position that cleaning, in particular plasma cleaning, of a deposition chamber is well-known and would have, consequently, been obvious to one of ordinary skill in the art.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William P. Fletcher III whose telephone number is (703) 308-7956. The examiner can normally be reached on Monday through Friday, 9 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shrive P. Beck can be reached on (703) 308-2333. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

William P. Fletcher III
Examiner
Art Unit 1762

WPF

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